Remarks

Claims 1-19 are pending in the application. Claims 1-19 are rejected. All rejections and objections are respectfully traversed.

Applicants claim an adaptive video playback method that is based on vision characteristics of the human visual system, and is independent of content characteristics analysis of the video.

Claims 1-3, 8-10, 12 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meng et al., "Scene Change Detection in a MPEG Compressed Video Sequence" (Meng), in view of Rajagopalan et al., U.S. Patent No. 6,181,742 (Rajagopalan).

Meng does not describe the claimed playing of frames of a video adaptively at a frame rate according to visual complexity of the video.

Rajagopalan does not describe the claimed playing of frames of a video adaptively at a frame rate according to visual complexity of the video.

Rajagopalan describes an encoding complexity and a statistical complexity based on the encoding complexity. Rajagopalan does not measure a *visual* complexity as claimed. The claimed adaptation is based on psycho-physical characteristics of the video rather than content analysis for encoding is in Rajagopalan.

6

The Examiner states:

> The playback of video images requires the encoding of image data that takes into account of the complexity of the video image data for optimally encoding the video image data so as to produce a clear, high quality representation of the video image data by implementing a video encoding/decoding scheme, ie. MPEG, that utilizes optimal encoding recursive rate control for producing the clear playback video images for viewing at the display terminal. Thus, there is a correlation between optimally encoding and decoding video images and playback a video at a rate corresponding to the visual complexity.

With all due respect, the Examiner's interpretation is the claimed invention is incorrect, and also does not agree with what is described in the present application.

The whole point is that the claimed playback method is completely *independent* of the content and how the video is encoded and decoded. Rather "the focus of the adaptation is based more on psycho-physical characteristics of the video rather than content, and the process is more of a presentation technique, than a content analysis method." Also, "[t]he adaptive playback method according to the invention is based on vision characteristics of the human visual system, and thus, the method is independent of content characteristics and semantics as would be required for video summaries."

There is absolutely no correlation between the optimal encoding and decoding of video images of Meng and Rajagopalan and the claimed playback of a video at a rate corresponding to the visual complexity. In fact, the claimed adaptive playback will still work even if the encoding is much less than optimal. For example, if the complexity of the video is low, the video can be played back at a relatively high frame rate. If the complexity is high, than the playback frame rate could be slow.

Neither of these playback rates depends *in any way* on the encoding of the video. As neither Meng nor Rajagopalan teach the variable frame rate playback as claimed, the combination of Meng and Rajagopalan cannot make the claimed invention obvious.

Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meng and Rajagopalan, in view of Kitaura et al., U.S. Patent No. 5,528,533 (Kitaura).

Nowhere does Meng, Rajagopalan and Kitaura describe the functions of claims 4-7. The claimed complexity measure is based on perceptual considerations of *spatio-temporal sampling frequency*, and the frame rate is adjusted to achieve a constant *visual complexity*. This is similar to maintaining visual quality.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meng and Rajagopalan, in view of Ashton, U.S. Patent No. 5,596,685 (Ashton).

Again, the combination of Meng and Rajagopalan fails to disclose the variable frame rate playback as claimed. The addition of Ashton fails to cure this defect. It is also ludicrous to believe that the teachings of Ashton are combinable with those of Meng and Rajagopalan. Ashton is directed toward shading of three dimensional images while Meng and Rajagopalan are concerned with video encoding and decoding. Again, none of these references come even remotely close to disclosing anything resembling variable playback rates as claimed.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meng and Rajagopalan, in view of Strolle et al., U.S. Patent No. 5,596,418 (Strolle).

The combination of Meng, Rajagopalan and Strolle fails to disclose the variable frame rate playback as claimed. Again, none of these references come even remotely close to disclosing anything resembling variable playback rates as claimed.

Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

Applicants assume that the Examiner meant to reject claim 11 as that claim mistakenly included the term "plying." Claim 11 is amended to overcome the rejection under 35 U.S.C. 112, second paragraph.

It is believed that this application is now in condition for allowance. A notice to this effect is respectfully requested. Should further questions arise concerning this application, the Examiner is invited to call Applicants' attorney at the number listed below. Please charge any shortage in fees due in connection with the filing of this paper to Deposit Account 50-0749.

Respectfully submitted,
Mitsubishi Electric Research Laboratories, Inc.

By

        /Clifton D. Mueller/
Clifton D. Mueller
Attorney for the Assignee
Reg. No. 57,836

201 Broadway, 8th Floor
Cambridge, MA 02139
Telephone: (617) 621-7517
Customer No. 022199